

WHAT IS CLAIMED IS:

1. A portable gas supply apparatus, comprising:

a first storage tank including an internal cavity for holding a supply of a pressurized fluid at a relatively high pressure, the first storage tank being thermally uninsulated such that the pressurized fluid therewithin remains at ambient temperature;

5 a first pressure reducing device having an inlet in fluid communication with the internal cavity of the first storage tank and an outlet, the first pressure reducing device reducing the pressure of fluid flowing therethrough from the relatively high pressure at the inlet to a first relatively lower pressure at the outlet;

10 a manifold having a plurality of manifold connection points in fluid connection with one another, a first of the manifold connection points being in fluid communication with the outlet of the first pressure reducing device;

a second storage tank including an internal cavity for holding pressurized fluid at the first relatively lower pressure, the internal cavity being in fluid communication with a second of the manifold connection points; and

15 a first pneumatic connector fitting in fluid communication with a third of the manifold connection points;

whereby, when a pressurized fluid is stored in the first storage tank at the relatively high pressure, a pneumatic tool connected to the first pneumatic connector fitting is provided with pressurized gas at the first relatively lower pressure.

2. A portable gas supply apparatus in accordance with claim 1, further comprising a frame connected to the first storage tank and the second storage tank, the frame including a handle and at least two wheels rotatably mounted on the frame so as to support the frame above the ground, whereby the apparatus may be rolled along the ground on the wheels by a single person holding the handle.

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3. A portable gas supply apparatus in accordance with claim 2, further comprising a heat exchanger having an inlet in fluid communication with the outlet of the first pressure reducing device and an outlet in fluid communication with the manifold, the heat exchanger allowing heat transfer from the ambient air to the pressurized fluid flowing between the outlet of the first pressure reducing device and the manifold.

4. A portable gas supply apparatus in accordance with claim 3, further comprising:
a temperature sensor for sensing the temperature of the pressurized fluid at the outlet of the heat exchanger and producing an output indicative of the temperature;
a blower for forcing ambient air through the heat exchanger; and
a blower motor driving the blower in response to the output from the temperature sensor.

5. A portable gas supply apparatus in accordance with claim 4, wherein the blower motor is a pneumatic motor powered by gas from the apparatus.

6. A portable gas supply apparatus in accordance with claim 3, further comprising a one-way valve having an inlet in fluid communication with the outlet of the first pressure reducing device and an outlet in fluid communication with the manifold, the one-way valve allowing fluids to flow therethrough only in the direction from the first pressure-reducing device toward the manifold.

7. A portable gas supply apparatus in accordance with claim 2, wherein the pressurized fluid in the first storage tank is carbon dioxide.

8. A portable gas supply apparatus in accordance with claim 7, wherein the carbon dioxide in the first storage tank includes carbon dioxide in a liquid phase.

9. A portable gas supply apparatus in accordance with claim 2, wherein the pressurized fluid in the first storage tank is a mixture of nitrogen and liquid carbon dioxide.

10. A portable gas supply apparatus in accordance with claim 2, wherein the relatively high pressure ranges from about 2500 psi to about 600 psi, and the first relatively low pressure ranges from about 150 psi to about 60 psi.

11. A portable gas supply apparatus in accordance with claim 2, further comprising:
a second pressure reducing device having an inlet in fluid communication with the manifold
and an outlet, the second pressure reducing device reducing the pressure of fluid
flowing therethrough from the first relatively lower pressure at the inlet to a second
relatively lower pressure at the outlet, the second relatively lower pressure being
lower than the first relatively lower pressure;

a secondary manifold having a plurality of secondary manifold connection points in fluid
connection with one another, a first of the secondary manifold connection points
being in fluid communication with the outlet of the second pressure reducing device;
and

a second pneumatic connector fitting in fluid communication with a second of the secondary
manifold connection points;

whereby, when a pressurized fluid is stored in the first storage tank at the relatively high
pressure, a pneumatic tool connected to the second pneumatic connector fitting is
provided with pressurized gas at the second relatively lower pressure.

12. A portable gas supply apparatus in accordance with claim 11, further comprising a
third storage tank including an internal cavity for holding pressurized fluid at the second relatively
lower pressure, the internal cavity being in fluid communication with a third of the secondary
manifold connection points.

13. A portable gas supply apparatus in accordance with claim 11, wherein the relatively high pressure ranges from about 2500 psi to about 600 psi, the first relatively low pressure ranges from about 150 psi to about 60 psi, and the second relatively low pressure ranges from about 25 psi to about 5 psi.

14. A portable gas supply apparatus, comprising:

a first storage tank including an internal cavity for holding a supply of a pressurized fluid including liquid carbon dioxide at a relatively high pressure;

a pickup tube extending into the internal cavity and having a free end disposed proximate to the bottom of the internal cavity such that any liquid present in the internal cavity can flow up the pickup tube;

a first pressure reducing device having an inlet in fluid communication with the pickup tube and an outlet, the first pressure reducing device reducing the pressure of fluid flowing therethrough from the relatively high pressure at the inlet to a first relatively lower pressure at the outlet;

a manifold having a plurality of manifold connection points in fluid connection with one another, a first of the manifold connection points being in fluid communication with the outlet of the first pressure reducing device;

a second storage tank including an internal cavity for holding pressurized fluid at the first relatively lower pressure, the internal cavity being in fluid communication with a second of the manifold connection points;

a first pneumatic connector fitting in fluid communication with a third of the manifold connection points;

an extinguisher cut-off valve having an inlet and an outlet, the inlet being in fluid communication with the pickup tube, the extinguisher cut-off valve being selectively movable from a closed position, wherein fluid flow from the inlet to the outlet is blocked, to an open position, wherein fluid can flow from the inlet to the outlet;

a length of flexible tubing having a first end in fluid communication with the outlet of the extinguisher cut-off valve;

an extinguisher activation valve having an inlet and an outlet, the inlet being in fluid communication with a second end of the flexible tubing, the extinguisher activation valve being manually operable to control the amount of fluid passing from the inlet to the outlet; and

an expansion nozzle in fluid communication with the outlet of the extinguisher activation valve;

whereby, when a pressurized fluid including liquid carbon dioxide is stored in the first storage tank at the relatively high pressure, a pneumatic tool connected to the first pneumatic connector fitting is provided with pressurized gas at the first relatively lower pressure, and when the extinguisher cut-off valve is in the open position and the extinguisher activation valve is opened, carbon dioxide at the relatively high pressure from the first storage tank flows through the flexible tubing and is discharged from the expansion nozzle so as to be directable for fire-extinguishing purposes.

15. A portable gas supply apparatus in accordance with claim 14, further comprising a frame connected to the first storage tank and the second storage tank, the frame including a handle and at least two wheels rotatably mounted on the frame so as to support the frame above the ground, whereby the apparatus may be rolled along the ground on the wheels by a single person holding the handle.

16. A portable gas supply apparatus in accordance with claim 15, further comprising a heat exchanger having an inlet in fluid communication with the outlet of the first pressure reducing device and an outlet in fluid communication with the manifold, the heat exchanger allowing heat transfer from the ambient air to the pressurized fluid flowing between the outlet of the first pressure reducing device and the manifold.

17. A portable gas supply apparatus in accordance with claim 16, further comprising:
a temperature sensor for sensing the temperature of the pressurized fluid at the outlet of the heat exchanger and producing an output indicative of the temperature;
a blower for forcing ambient air through the heat exchanger; and
a blower motor driving the blower in response to the output from the temperature sensor.

18. A portable gas supply apparatus in accordance with claim 17, wherein the blower motor is a pneumatic motor powered by gas from the apparatus.

19. A portable gas supply apparatus in accordance with claim 15, further comprising:
a second pressure reducing device having an inlet in fluid communication with the manifold
and an outlet, the second pressure reducing device reducing the pressure of fluid
flowing therethrough from the first relatively lower pressure at the inlet to a second
relatively lower pressure at the outlet, the second relatively lower pressure being
lower than the first relatively lower pressure;

a secondary manifold having a plurality of secondary manifold connection points in fluid
connection with one another, a first of the secondary manifold connection points
being in fluid communication with the outlet of the second pressure reducing device;
and

a second pneumatic connector fitting in fluid communication with a second of the secondary
manifold connection points;

whereby, when a pressurized fluid is stored in the first storage tank at the relatively high
pressure, a pneumatic tool connected to the second pneumatic connector fitting is
provided with pressurized gas at the second relatively lower pressure.

20. A portable gas supply apparatus in accordance with claim 19, further comprising a
third storage tank including an internal cavity for holding pressurized fluid at the second relatively
lower pressure, the internal cavity being in fluid communication with a third of the secondary
manifold connection points.